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OCTOBER 1988

ELECTRIC LIGHT & POWER

EL&P

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VOICE OF THE ELECTRIC UTILITY INDUSTRY

PSNM slashes staff

Matches TVA's 20% cut; Duke may trim 10%; streamlining for the '90s?

ALBUQUERQUE, NM—In an effort to reverse a deteriorating financial position, and maintain its dividend of $1.52/share, Public Service Company of New Mexico announced staff cuts of 799—19.4 percent of its work force—effective Oct. 30.

Duke studying cuts

Duke Power Co. recently announced a company-wide evaluation that could trim 10 percent of its workforce. As previously reported, Tennessee Valley Authority in June cut 7500 personnel, 20 percent, as a reorganization effort to cut costs and check rate increases in the name of competition.

The PSNM cuts reduce salaries, wages and benefits by $28.4 million. Additionally $15.4 million was cut in non-labor operations expenses. Construction expenses were cut by $19 million in 1988 and by $33.6 million from budgeted 1989 levels.

PSNM work force is now 3327 people, down 976 jobs from peak employment of 4303 in 1985.

"We are taking drastic steps to assure the survival of our company and renew our core business as electric, gas and water utility services," said PSNM Chairman and President Jerry Geist about the Aug. 30 announcement.

"The reduction in our staff is the most difficult step to take, but one that was absolutely necessary to assure PSNM's long-term financial survival and competitiveness," he said.

"Our earnings dropped 38 percent between 1986 and 1987 and continued to decline in the first half of this year," he said. Dividends also have been reduced by nearly half.

PSNM's common stock price, which was 39⅛ last March 13, fell to 12⅝ Aug. 29, the lowest since 1974. By Sept. 9, it had risen slightly to 14½.

Number of cuts

PSNM staff cuts include 35 executives, 27.6 percent, and 764 non-executives, 19.1 percent. The reductions include 74 vacant positions. Various employee-severance plans and career-counseling programs were set up to help those affected.

The breakdown is as follows: corporate office 47, 30.5 percent; electric

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LATE NEWS

PS of New Hampshire's Robert J. Harrison, president and chief executive officer, resigned, citing health problems. John Duffett, chief operating officer and executive vice president, replaced him. (See related story, p.13.)

A $4-billion, 2000-MW, coal-fired plant is proceeding with permitting and licensing at the Thousand Springs site, in northeast Nevada. The first 250-MW unit is scheduled for completion in the mid '90s. Wholesale power will be sold to Western utilities. Project owners are: Bonneville Pacific Corp.; Coastal States Energy Co.; Foster Wheeler Energy Corp.; Robert L. Helms Construction & Development Co.; Kidder, Peabody & Co.; Pittsburg & Midway Coal Mining Co.; Sierra Pacific Resources; and Westinghouse Electric Corp.

Nuclear battery seen in two yrs; prototype works

PORTLAND, OR—Peripheral Systems Inc. is continuing with development of a nuclear battery that it says will produce alternating current at 3¢/kWh or less. The company hopes to go commercial with the battery in two years.

Such a battery could provide up to 100 kW, from used fuel from nuclear power plants or other radioactive isotopes, say company officials.

In June, Peripheral Systems acquired 51 percent of Nucell, the company that carried out the initial research on this nuclear battery concept. Peripheral had provided the research-and-development funding for Nucell's radio-

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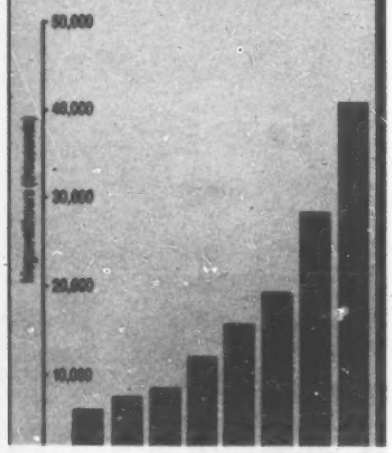
ENERGY FROM NONUTILITIES

Nonutility producers accounted for 3.5 percent of U.S. electrical generating capacity in 1986, according to the Edison Electric Institute. This was a 10-percent increase over 1985. In a first-of-a-kind report, EEI notes that cogenerators supplied 18,448 MW, and small- and independent-power producers gave 6873 MW to this total. All three generated 112,008 GWh in 1986, or 14 percent more than in '85. Of this amount, 40,719 GWh was supplied to electric utility systems in 1986. (See story, p. 27.)



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SDG&E tells SCEcorp no; TEP pleased

SAN DIEGO—San Diego Gas & Electric Co.'s board of directors announced its unanimous decision to reject SCEcorp's unsolicited buyout offer and to proceed with the previously announced merger with Tucson Electric Power Co. SCEcorp officials promised, for now, to leave open the offer.

The final word remains to be heard, however. Several shareholder suits were filed against SDG&E after its announcement.

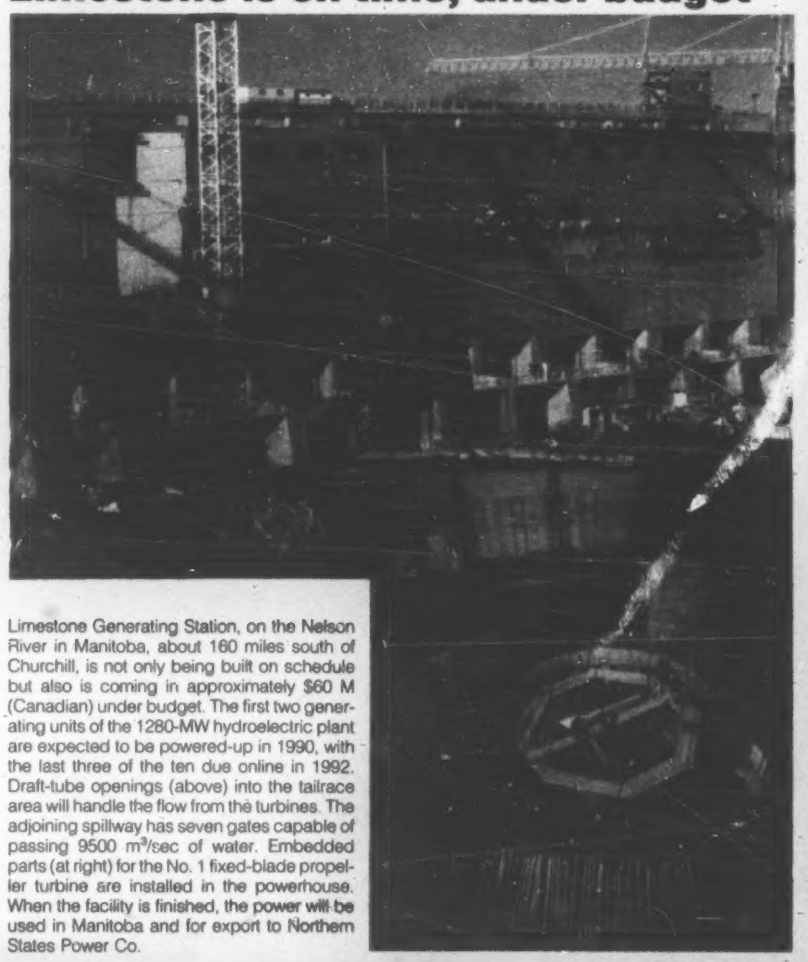
To hear executives from SDG&E and SCEcorp talk about the spurned offer, one would think the two sides were looking at different proposals entirely (*EL&P*, September, p.1).

Thomas A. Page, chairman, president and chief executive officer of SDG&E, said "While the SCE proposal represented potential short-term benefits to our shareholders, our board believes that the long-term benefits expected to result from continuing to pursue our strategic goals, including the merger, outweigh the short-term benefits of the SCE offer."

Howard P. Allen, chairman and chief executive officer of SCEcorp and its electric subsidiary Southern California Edison Co., was amazed the

Continued on page 13

Limestone is on time, under budget



Limestone Generating Station, on the Nelson River in Manitoba, about 160 miles south of Churchill, is not only being built on schedule but also is coming in approximately $60 M (Canadian) under budget. The first two generating units of the 1280-MW hydroelectric plant are expected to be powered-up in 1990, with the last three of the ten due online in 1992. Draft-tube openings (above) into the tailrace area will handle the flow from the turbines. The adjoining spillway has seven gates capable of passing 9500 m^3/sec of water. Embedded parts (at right) for the No. 1 fixed-blade propeller turbine are installed in the powerhouse. When the facility is finished, the power will be used in Manitoba and for export to Northern States Power Co.

News Briefs

JILL MINNER, Assistant Editor

NBS takes on new name, responsibilities

The National Bureau of Standards became the National Institute of Standards and Technology (NIST) recently, when President Reagan signed the Omnibus Trade and Competitiveness Act into law, according to the U.S. Department of Commerce. In addition to its current responsibilities, NIST will receive several new assignments designed to boost U.S. industry in the world marketplace. The Commerce Department said that, under the new law, NIST has until December 21 to submit a new organization plan to Congress.

K-Fuel M&D plant moves to start-up phase

The K-Fuel Modification and Development plant has received its first trial runs of coal and is moving into start-up phase, according to Fluor Daniel. The plant is a demonstration unit that Fluor Daniel has been working on for Energy Brothers, an affiliate of the project's owner, K-Fuel Partnership. The K-Fuel process removes water and oxygen from coal to enhance the calorific value of low rank fuels while also reducing sulfur content.

The Southern Co. and Florida Power finalize power supply contracts

The Southern Company announced that its five operating units—Alabama Power, Georgia Power, Gulf Power, Mississippi Power and Savannah Electric—will supply coal-fired electricity to Florida Power & Light Co. and the Jacksonville Electric Authority. Agreements between The Southern Company and Florida Power Corp. cover sales of up to 1500 MW over a 17-year period beginning in 1993. "We believe our customers and stockholders will benefit from these transactions because, in the mid-to-late 1990s, we can meet the additional energy demand we're projecting for our own service area with other alternatives such as peaking units," explained Southern Company President Edward L. Addison.

Baukol-Noonan, Inc. and Minnesota Power sign merger agreement

According to Minnesota Power, it has signed a definitive merger agreement with Baukol-Noonan, Inc. under which the company will become a wholly-owned subsidiary of Minnesota Power. Headquartered in Minot, ND, Baukol-Noonan is involved in surface mining and the sale of lignite coal in North Dakota.

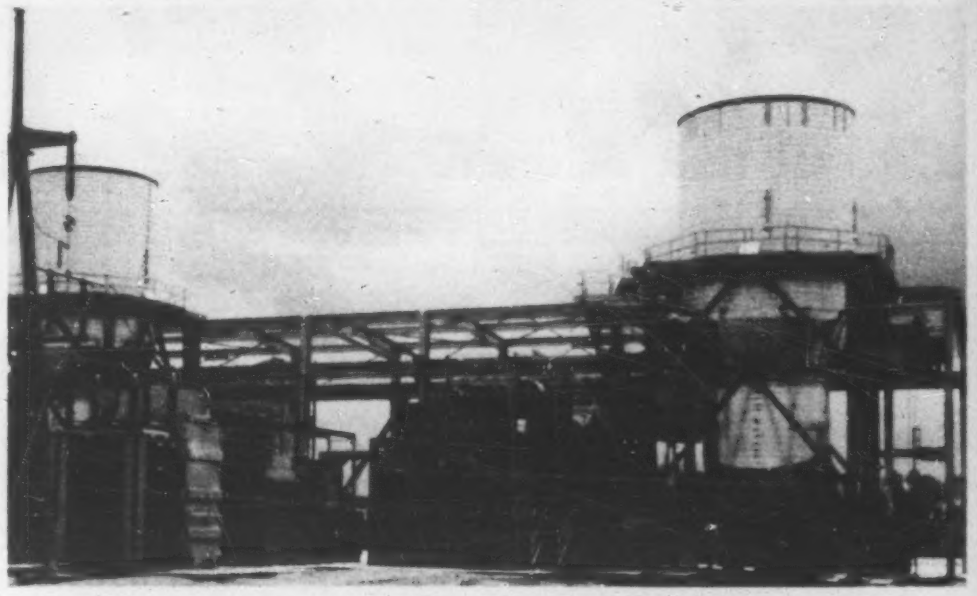
Black & Veatch buys resource recovery firm

Black & Veatch has acquired REFCOM Corporation, a design firm specializing in resource recovery projects. Black & Veatch, an engineering and architectural design firm, said it has designated REFCOM's Richmond, VA location as its regional office.

General Cable, Capital Wire & Cable merge

Penn Central Corp. said it has purchased Capital Wire & Cable Corp. for about 850 million. Capital will be merged with General Cable Co.'s Guardian Products division, a unit of Penn Central Telecommunications Co. Guardian President Eugene J. Tonkovich said the union will enable General Cable to supply a broader line of electrical and electronic products to the electrical distribution, construction and electric utility markets.

TU Electric orders six gas turbines from GE



Texas Utilities Electric Co. has ordered six MS7001EA gas turbine-generator sets from General Electric to meet peaking load requirements, according to GE. Four of the units are scheduled for installation at TU Electric's DeCordova power plant, while the other two will be sent to the utility's Permian Basin power plant where three GE units are already operating. GE said it will begin shipping the units in February, and expects them to be in service by the summer of 1990.

NPPC votes in favor of protected wildlife areas

The Northwest Power Planning Council (NPPC) has voted to adopt an action which will designate "protected areas" for fish and wildlife populations that have been harmed by hydroelectric development in the Columbia River Basin. NPPC said the areas would cover habitat for critically important or endangered wildlife and sections of streams with critical habitat for fish and wildlife. The council was formed by the states of Idaho, Montana, Oregon and Washington under authorization of the Northwest Power Act of 1980. While NPPC cannot prohibit hydropower development, the Federal Energy Regulatory Commission must take the council's program into account in its decision-making process, according to the terms of the Act.

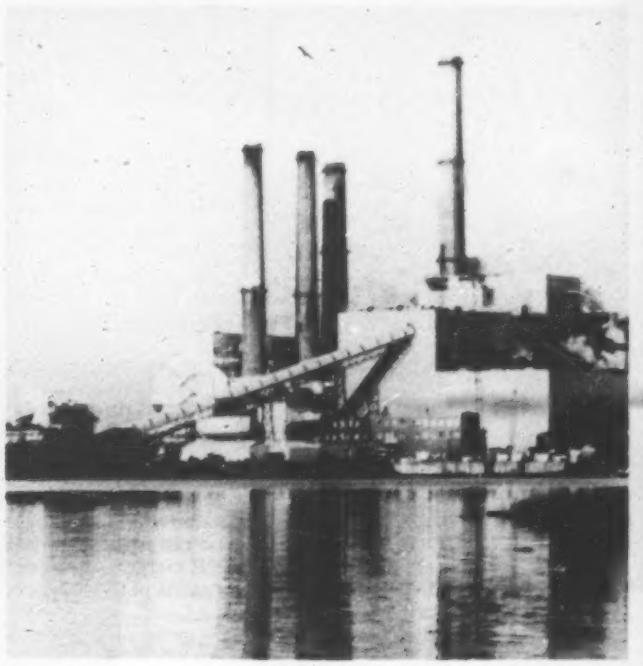
October is 'Energy Awareness Month'

The Department of Energy has designated October as 'Energy Awareness Month' as part of the eighth annual National Energy Awareness campaign. DOE said it is sponsoring the 'month' to promote a better understanding of the role of energy in the economy, and the importance of energy to the nation's health, welfare and national security.

Herrington appoints SWPA administrator

J.M. Shafer has been named administrator of the Southwestern Power Administration (SWPA) by Department of Energy Secretary John S. Herrington. Shafer, formerly SWPA deputy administrator, succeeds the retiring Ronald H. Wilkerson.

NEP's Brayton Point-1 celebrates 25th



New England Power Co. recently held an anniversary celebration marking 25 years of commercial operation at Unit 1 of its Brayton Point Station. NEP said its fossil fuel power plant generates over 1500 MW of electricity and consumes about 3 million tons of coal and more than 3.2 million barrels of oil annually.

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ELAP readers whose responsibilities include both Generation and Transmission/Distribution receive both technology sections. Other readers receive the technology section that applies to their respective area of responsibility. The Generation edition is indicated by a single dot (·) in the upper right corner of page 1; the T/D edition carries two dots (··). All readers receive ELAP's industry news section.

COMMENTARY

Nope on NOPRs

The Federal Energy Regulatory Commission has made a sincere effort to correct and amend the Public Utility Regulatory Policy Act of 1978. But it is important that this effort, as demonstrated in the four Notices of Proposed Rulemakings (NOPR) currently pending before the Commission, be carefully analyzed and reworked...substantially reworked.

The NOPRs, according to FERC, would amend and clarify PURPA regulations currently in effect. They also would encourage cogeneration and small power production, energy conservation, efficient use of facilities and resources by utilities and promote fair and equitable rates for customers. They would initiate procedures for competitive bidding for utilities' business and establish independent power producers as a new class of power supplier.

Modification of PURPA regs is long overdue. Congress evidently didn't believe in the old adage that "if it ain't broke, don't fix it," when it wrote the initial legislation a decade ago. As a result, the initial regulations created many problems by requiring utilities to buy cogeneration power at "avoided costs" that, in some cases, were higher than the utility's cost of generation.

It is important that such inequities be corrected. At the same time, care must be taken to ensure that new punitive regulations aren't created. Specifically, utilities must be given the option to purchase from non-utility suppliers or generate their own power, depending on the economics and the evaluated nature of the non-utility bid. The utility has the responsibility to serve; therefore, it needs the option to decide on a non-utility generator's commitment and ability to serve, as well as the real price of power for each bidder. To force purchase of electricity generated outside a utility's system, to preclude the utility providing the service itself, would establish an entire new power supply system, a system that has not been tested and which *could* result in severe inconvenience to customers, as well as higher-than-necessary prices.

The question of how there can be a open competition in the generation marketplace without some form of transmission access has not been addressed either. Public power spokesmen and some non-utility generators are calling for open access for all. But no one as yet has tackled the complex question of how a transmission system can be operated reliably if subject to in-again, out-again generation from diverse non-utility generation sites operated at the discretion of the generators. Owners of transmission facilities, who are responsible for service to ultimate customers, must continue to control the transmission network. Flexible pricing and specific contractual commitments by non-utility generators are essential.

FERC's NOPRs represent substantial improvements in PURPA regulations, but further effort is needed if they are to provide workable, real-world procedures that will improve the quality of the power supply and guarantee optimal rates for consumers over time.

How does Zimmer stack up?

Work on the Wm. H. Zimmer Generating Station's 573-foot stack will continue through November as part of the multi-million dollar air-quality control system that includes electrostatic precipitators (right) and a flue-gas desulfurization system. Far right, steel erection on the boiler building is underway. Owned by Cincinnati Gas & Electric Co., Columbus Southern Power Co. and The Dayton Power and Light Co., Zimmer is a coal-fired conversion of a nuclear plant, to operate in 1991.

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LETTERS

Ductwork corrosion

In the February issue (p. 17) I noticed an article concerning ductwork corrosion. Battelle Columbus Div., in conjunction with EPRI, has started a two-year program to test different metals and/or non-metallic coatings as combatants to the aforementioned corrosions. Since I have already been through some of these tests, successes, failures and evaluations, I can speak with some expertise on the subject.

At one of TU (Texas Utilities) Electric lignite-fired plants, a mandatory survival operation was implemented to sustain the ductwork not already deteriorated to the point of failure. This undertaking was mandated by the metal duct fatigue, buildup of carryover ash and the strong desire of company leaders to provide safe, reliable and economical power to our customers.

Martin Lake Steam Electric Station is located approximately 150 miles southwest of Dallas in the "Lignite Belt." Three 750-MW units with wet limestone FGD systems were started up in the late 1970s and problems with the ductwork became apparent very quickly. The wet discharge from the scrubber towers mixing with the high sulfur-content gases in the bypass duct was a primary target of concern. Later, the scrubber towers, AFT tanks and associated piping became concerns also.

After five years of testing metals, coatings, applications, applicators, operating criteria changes and maintenance methods, as well as expending many millions of dollars along with a lot of long, hard work, progress was made to provide safe, reliable and more economical power.

Many engineers, contractors, vendors and other TU employees contributed to the answers that have been gathered to the many questions we had at the onset. Some questions still remain, and no doubt many more will come up as further progress is made. However, without an understanding management team behind us, very little progress could have been made.

If the people at Battelle would consider using information from some "good ol' boys" from Texas, I can refer them to some people that have gained, as I did, first-hand knoweledge and learned some do's and don'ts about ductwork corrosion and repair.

C.R. Wilkerson
Project Management Specialist
TU Electric
Tyler, TX

Transmission tower coatings

The article entitled "Coatings judged 'most promising' for tower protection" (August *EL&P*, p.31) contains a misleading statement. Perhaps a few comments will put the subject in perspective and prevent interested readers from getting the wrong impression.

Bare weathering steel towers have been used in transmission lines in the U.S. for nearly 25 years. After a decade or so of exposure to the atmosphere, rust packout can form on the faying surfaces inside the belted connections, and cause members to deform. In some cases, the packout can achieve thicknesses of ⅜- to ½-in. The appearance of such a joint can be startling and raise questions concerning the integrity of the involved structure.

Nine utilities with a significant number of weathering steel towers on their systems co-sponsored an extensive study into the packout phenomenon. The study consisted of two separate and parallel investigations.

The first was designed to determine the effect packout had on the integrity of standing towers, as well as on their expected useful lives. Non-destructive evaluation techniques were employed to inspect a statistically significant sample of weathered towers. Packed-out joints were sent from the field to a structural laboratory and were tested in comparison with similar-sized joints made from non-corroded members. In addition, packed-out joints were tested *in-situ* in the field and compared with replacement joints made from similar-sized, non-corroded members.

In the article, the statement is made in paragraph three "Pack rust is the accumulation of rust in crevices and bolted connections that eventually can loosen joints and adversely affect the safety and integrity of utility towers." This statement is not consistent with the facts. The lab and field tests conducted indicated that packout *tightened* and, in fact, *strengthened* the joint. In addition, this phase of the study showed that the packout phenomenon, by itself, does not cause a measurable decrease in the expected useful life of the structure.

The second part of the study is the one referred to in the article. Its objective was to assess, by means of accelerated lab tests, the available coating systems for potential application where needed to take care of specific micro-environmental conditions. The article properly identifies the coating systems that appear to have the best combination of application and protection properties. These coating systems have been used in trial applications on operating utility structures and are under observation at this point in time.

The research team for the project concluded that such coatings should be considered for specific application to joints where the packout is not mechanically sound or missing for any reason, as well as for general application to structure surfaces in locations where it will stay wet for long periods of time.

Anyone desiring more information can contact the writer.

Joe C. Pohlman, PE
Project Manager
P.O. Box 15098
Pittsburgh, PA 15237

Energy storage

In an Edison Electric Institute publication titled "Electricity: Sources and Technologies," I read this astounding sentence:

If a person were to think of one single thing to truly revolutionize electric power production in the U.S., it would be to find an economical method of storing energy.

I have studied energy conservation methods, worldwide, for some years and so became aware of six economic, non-polluting methods to store energy produced during off-peak hours for use during peak hours. For some unknown and puzzling reason, we in the U.S. use only ice (and cold water) storage, and then only on a limited basis.

As I understand the Edison Electric Institute's statement, we could supply the entire U.S. with all the power we need, but with possibly only two-thirds of our base-load generating plants operating around the clock at full capacity, thereby efficiently storing electricity rather than all of them idling inefficiently during off-peak hours, burning fuel but producing and selling little power.

Further, with sufficient energy storage means in-place, we could eliminate, gradually but totally, the costly upkeep and use of oil- and gas-burning peaking plants and their consequently expen-

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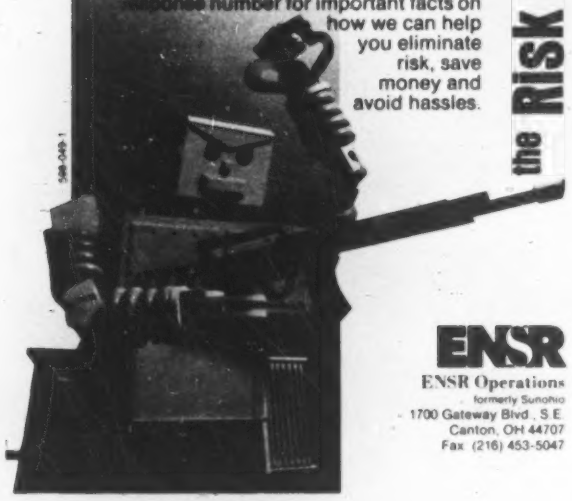

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1988 estimates of coal use increase

WASHINGTON—The strength of the fourth-quarter production and utility coal consumption, along with a second summer of abnormally hot weather and drought led the National Coal Association to increase its estimates of total U.S. coal consumption for 1988.

A second consecutive record year is now anticipated, a significant revision from the December 1987 estimate of 1988 production.

Total coal production of bituminous, lignite and anthracite coal is forecast to total 926-million tons this year, 9 million more than the record 917-million tons produced in 1987, according to tne midyear forecast of coal markets prepared by the association's Economic Committee.

Electric Utilities
Percent Generation by Fuel

	Coal	Nuclear	Hydro	Gas	Oil
1986	56.8	15.9	15.6	11.8	2.2
1987	55.7	15.5	16.6	12.2	0.7
1988*	56.9	15.2	17.7	10.2	3.4
1988*	56.5	15.0	19.2	9.3	2.9

*Consensus forecast
Source: National Coal Association

Including imports, coal available for sale produced in the U.S. is expected to total 932-million tons, 15-million tons (1.6 percent) greater than 1987.

Coal share down

Despite those anticipated overall increases, coal's share of the electric utility market is expected to fall slightly to 56.5 percent, primarily from increased nuclear generation and strong competition from other fuels.

Utility coal consumption is expected to reach 733-million tons in 1988, an increase of 15-million tons over 1987 levels and a new usage record by the industry.

Slightly more than 2.6 GW of new coal-fired power came on line in 1987, and an additional 1.8 GW are expected in 1988 in Florida, Texas and Georgia.

Economic forecasts call for the real rate of growth in GNP to be 2.9 percent in 1988, about the same as 1986 and 1987. The growth in GNP—3.6 percent for first-quarter 1988—should be higher in the first half of 1988 than in the second half of the year. The rate of increase in industrial production, as measured by the Federal Reserve Board's Industrial Production Index, is expected to slow slightly from 1987 and increase by 3.2 percent in 1988. The rate of increase in electrical generation is also expected to be slightly lower this year, 2.9 percent versus the 3.4 percent in 1987.

John Grasser, an NCA representative, said the revised projections do account for the summer's heat wave, but said the percent increase could be greater if severe weather persists.

Unanticipated strength

"The unanticipated strength in both indicators is led by manufacturing activity of the export market; retail spending for consumer durables is also higher than earlier forecast, adding to the growth in real GNP," the NCA forecast pointed out.

NRC increases plant fees 12%

WASHINGTON—Nuclear Regulatory Commission fees for all licensed power reactors will increase 12 percent, or an average of $350,000 per unit per year. The additional fees are to cover NRC-incurred generic regulatory costs and apply to all licensed power reactors, with exceptions for R&D and other specific non-commercial purposes.

The Omnibus Budget Reconciliation Act of 1987 requires the NRC to collect 45 percent of its $392.8-million fiscal-1988 budget, or $177 million, from the reactor systems it regulates. Last year, the NRC collected only 33 percent, or $132.3 million, out of a total budget of $409.5 million.

Commonwealth Edison Co., the nation's largest nuclear utility, will pay more than $15.4 million in 1988 fees to the NRC for its 12 nuclear units, a company spokesman said.

APPA, EEI ratios: how does your utility compare?

WASHINGTON—How does *your* utility stack up against published average financial ratios?

The question arose as a result of a new publication from the American Public Power Association that provides a number of operating and financial ratios from its members. No matter what the answer is, however, APPA warns utility managers and executives to use financial ratios with caution.

"The ratios, by themselves, do not provide definitive answers [to improving efficiency]; rather, they are the starting point for an informed evaluation of a utility's operations," says the introduction in American Public Power Association's "Selected Financial and Operating Ratios for Public Power Systems, 1986," released in June.

In the following table, *EL&P* has given some of the more important APPA-member ratios and has added comparable ratios for investor-owned utilities, taken from the Edison Electric Institute's "Statistical Yearbook of the Electric Utility Industry for 1986."

John Kelly, APPA director of economics and research, advanced additional cautions when comparing investor-owned and public utilities.

"Net income of nonprofit utilities is necessarily lower because the return is realized through lower rates," Kelly said. "Return to private utilities pays dividends and stock appreciation." He did not mention the added taxes that investor-owned utilities pay.

Because of that, and slight differences in definitions, "a simple comparison of investment figures leaves a lot to be desired," Kelly explained.

Still, Kelly continued, utility executives should be interested in analyzing and comparing the figures to their own.

Terms defined

For comparison, APPA makes the following distinctions:

- Customer size classes refers to ultimate customers served by the utility.
- Return on investment is net income divided by total investment and surplus (total capitalization).
- Debt-to-equity ratio is the total long-term debt and total current and accrued liabilities divided by total assets and other debits.
- Operating ratio is total electric operating expenses, less depreciation and amortization, divided by electric utility operating revenues.

Kelly said he's working on a number of revisions of ratios and information for the next report. The 1986 edition was the first.

The 42-page APPA report offers data on 17 catagories of financial and operating ratios for 400 U.S. public power systems with retail sales of 100,000 MWh or more. Joint-action agencies are not included. The report may be ordered by writing APPA, 2301 M Street NW, Washington, DC 20037 or calling 202/467-2908.

Comparison of Public Power and Investor-Owned Utility Financial Ratios

	Public Power '86[1]	IOU '86*	IOU '87*
Revenue/kWh (Dollars)			
All Retail Classes	0.054	0.0570	0.0599
Residential	0.066	0.0778	0.0775
Commercial	0.060	0.0740	0.0724
Industrial	0.047	0.0512	0.0488
Revenue/Customer (Dollars)			
All Retail Classes	1369	1539	1592
Residential	593	695	693
Commercial	3302	4487	4630
Industrial	49,653	68,810	67,735
Return on Investment	0.069	0.083	0.089
Debt-Equity Ratio	0.807	0.457	0.485
Operating Ratio	0.780	0.705	0.691
Net Income/Revenue Dollar	0.100	0.169	0.160
Retail Customer/Employee	162	161	NA

[1] "Selected Financial and Operating Ratios of Public Power Systems, 1986," by American Public Power Association, June 1988.
* "Statistical Yearbook of the Electric Utility Industry," by Edison Electric Institute, 1986, 1987 figures are preliminary.

PCB Retrofilling

Our unique retrofilling system offers lower PCB leach back rates, better desludging and cleansing, and greater economy than conventional methods. It drains, flushes and refills, or processes transformers with clean, non-PCB mineral oil, then we detoxify the contaminated oil at your site or at our facility.

Whatever your PCB concern, we can provide a money-saving, hassle-free solution. Call us at (216) 452-0837 or circle the reader response number for important facts on retrofilling and other options.

the Problem Solver

ENSR

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